CLAIMS

1. An electron b am apparatus comprising; an electron gun for directing a plurality of primary electron beams onto a sample,

an accelerator for accelerating a plurality of secondary electron beams emitted from said sample;

a separator for separating said a plurality of secondary electron beams from a primary optical system;

a director for directing said plurality of secondary electron beams into a secondary optical system for guiding to a detector outputting a detection signal of the secondary electron beams; and

a plate having a plurality of apertures corresponding to said plurality of secondary electron beams in front of said detector.

2. An electron beam apparatus according to claim 1, wherein said plurality of primary electron beams and said plurality of secondary electron beams are arranged in the vicinity of an optical axis, and said plurality of apertures are formed in the shape of an ellipse which is longer in a radial direction, an X-axis direction of XY-coordinates, and/or a Y-axis direction of the XY-coordinates from the optical axis in a plane orthogonal to the optical axis.

3. An electron beam apparatus according to claim 1, further comprising a number of memories twice as much as the number of said detectors for storing digital signals

generated by A/D converting the detection signals, and change-over switches disposed in front of and at th back of said memories, wh rein the detection signals from said detectors are input in one of said memories while the previous detection signals stored in another of said memories are transmitted into a CPU or an image processing unit.

4. An electron beam apparatus according to claim 1, further comprising a deflector for deflecting said secondary electron beams in said secondary optical system, wherein said deflector is controlled to deflect said plurality of secondary electron beams asynchronously with scanning of said plurality of primary electron beams, thereby preventing said plurality of secondary electron beams from moving on said second aperture plate in response to the scanning of said plurality of primary electron beams.

5. An electron beam apparatus comprising:

an electron gun having a cathode member, a Wehnelt member, and an anode member,

wherein a portion of said Wehnelt member adjacent to said cathode member can be separated from the rest of said Wehnelt member, and can be finely moved in an x-direction, a y-direction, or a z-direction orthogonal to one another.

6. An electron beam apparatus according to claim 5, comprising an electron gun which has a multi-emitter machined as a cathode including a plurality of emitters integrated thereon, a heater for heating said multi-emitter, a supportor for fixing said multi-emitter and said heater

at given positions, a Wehnelt electrode, and a fine adjustment m chanism for finely adjusting the position of a portion of said Wehnelt electrode which is adjacent to said multi-emitter, wherein:

said fine adjustment mechanism is configured to be able to finely adjust the position of said portion of said Wehnelt electrode in at least one of an x-direction, a y-direction, and a θ- direction in a plane parallel to a plane which includes said multi-emitter, and a tilt direction in a plane perpendicular to said plane.

7. An electron beam apparatus according to claim 6, wherein said fine adjustment mechanism in the θ-direction or tilt direction is disposed at a Z-position substantially identical to said emitter.

8. An electron beam apparatus according to claim 6, wherein said portion of said Wehnelt electrode has a plurality of small holes corresponding to said plurality of emitters, and has a thickness of 200 μm or less only in the vicinity of said holes.

9. An electron beam apparatus according to claim 5, wherein said electron beam apparatus forms a plurality of narrowed electron beams from emissions of said electron gun, scans a sample surface with said electron beams, and detects secondary electron beams formed of secondary electrons emitted from scanned positions on said sample surface using a plurality of detectors.

10. A device manufacturing method characterized by evaluating a wafer after the end of each wafer process for

at least one wafer process using an electron beam apparatus according to claim 1.

11. An electron beam apparatus comprising; an electron gun for directing a plurality of primary electron beams onto a sample,

an accelerator for accelerating a plurality of secondary electron beams emitted from said sample;

a separator for separating said a plurality of secondary electron beams from a primary optical system;

a director for directing said plurality of secondary electron beams into a secondary optical system for guiding to a detector outputting a detection signal of the secondary electron beams; and

an ExB separator deposited between the objective lens and the former stage lens in the primary optical system for separating said secondary electron.

12. An electron beam apparatus for directing a plurality of primary electron beams onto a sample, comprising:

an accelerator for accelerating a plurality of secondary electron beams emitted from said sample;

a separator for separating said secondary electron beams from a primary optical system; and

a director for directing said plurality of secondary electron beams into a secondary optical system for guiding to a detector outputting a detection signal of the secondary electron beams;

wherein a secondary electron image is focussed around the separator.